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(54) Telecommunications access control device

(57) A device for preventing unauthorised use of a plug in telephone comprises a housing 20 which completely encloses the telephone socket box 23 and contains an electronic device 22 pre-programmed with an access code which must be entered by a user to enable access to the exchange line for anything other than emergency calls.

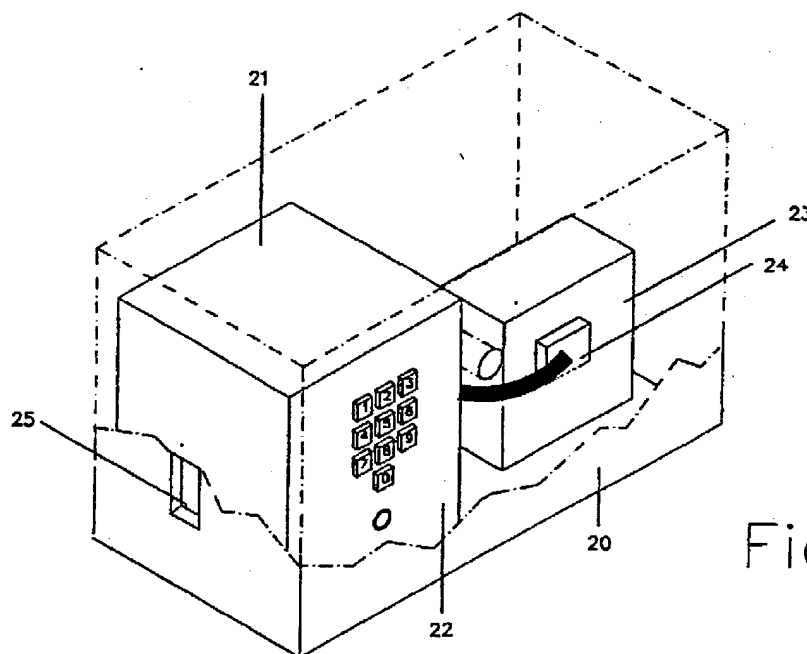


Fig 2.

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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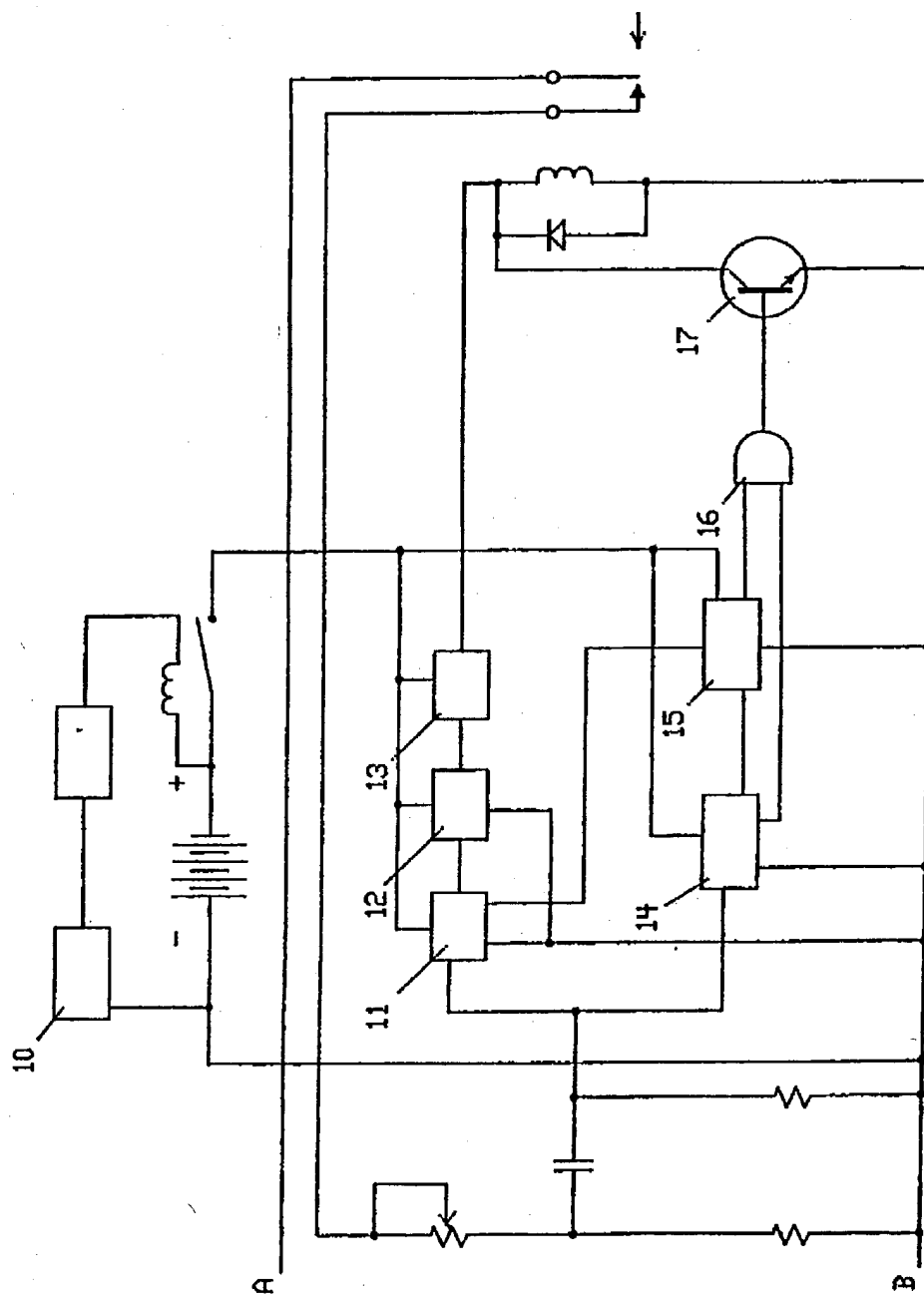
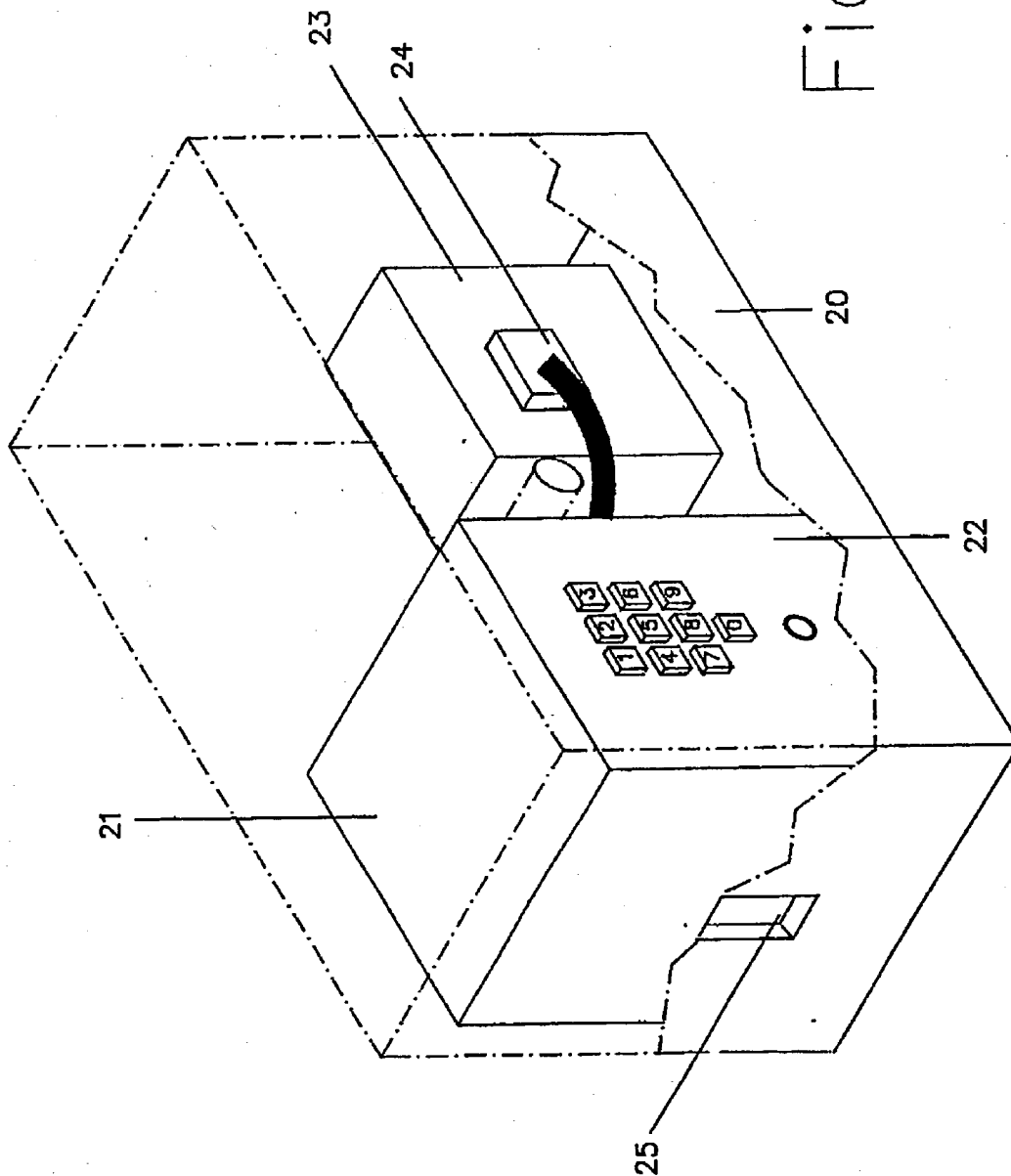


FIG 1

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Fig 2.



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TELECOMMUNICATIONS ACCESS CONTROL DEVICE

The present invention relates to a device for controlling access to telecommunication lines or networks.

The unauthorised use of telephones and other telecommunications equipment is a well known problem which can result in serious financial losses to subscribers. Various attempts have been made to overcome this problem, and a variety of locks are available which are provided to prevent unauthorised access. For the traditional dial-type telephone simple cylindrical dial locks were provided, but the problem is more difficult with telephones incorporating a keypad, although some known examples include lockable shields which prevent access to the keys, normally only permitting access to the nine to allow for emergency 'phone calls. However, the advent of a standard telephone socket introduces a further difficulty, in that, if the key pad on a telephone is protected by some lockable device, an unauthorised user can simply unplug the protected instrument and plug in an unprotected instrument and make a call. To protect against this option, various locking devices have been proposed for the sockets themselves, either to prevent removal of a protected instrument from a socket by an unauthorised user, or alternatively to prevent access to a socket by an unauthorised user. As can be appreciated, such measures can be very inconvenient to an authorised user, particularly if there are a number of sockets distributed around the building on one or more line, since all sockets and telephone instruments would have to be protected in a similar manner.

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According to the present invention it is sought to provide a device which is locatable at the main or master socket of an incoming telecommunications line to provide a means for preventing unauthorised access to such line.

According to the present invention there is provided an access control device for preventing unauthorised access to a telecommunications line or network, comprising a housing for completely covering a standard telephone socket and containing an electronic control unit connectable to such telephone socket, said housing also incorporating a telephone socket for enabling connection of a telephone instrument to said telecommunications line, via said electronic control unit, subject to the input thereto of a predetermined access code.

Where a number of extension sockets are additionally provided, these should be connected via the electronic control unit to the main telephone line so that such addition sockets must also be protected by the access control unit.

The unit preferably incorporates timing means to enable emergency access to the external telephone line whenever a 999 call is required to be made, such being recognised by the electronic control unit as being an emergency input, whilst if any other number is entered, then after a predetermined time interval the call is disconnected.

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Thus, upon entering a predetermined access code into the key pad associated with the access control device, a telephone instrument connected thereto may be used to make a call, whereas, to disable the device upon entry of the same or another predetermined code the unit is disabled, thereby preventing unauthorised access except in an emergency.

It will be appreciated that a device of the present invention provides the flexibility offered by a terminal socket enabling a variety of telecommunications equipment to be connected thereto, whilst at the same time providing a means of controlling access to the exchange line for outgoing calls. It is intended that the unit may for example allow incoming calls to be received at any time, but only permit emergency (999) calls or other outgoing calls subject to the correct access code being entered.

The present invention will now be described further with reference to the accompanying drawings in which;

Fig. 1 is a block circuit diagram of a device according to the present invention; and

Fig. 2 illustrates an embodiment of the invention.

Referring first to Fig. 1, a block circuit diagram is shown including a keypad and combination lock 10 which is pre-programmed with an access code suitably comprising six digits, although such may be an alpha-numeric keypad and the code may comprise a combination of letters and numbers, if preferred. The power supply to the unit comprises standard batteries, which are readily

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accessible to enable easy replacement when necessary. The arrangement also includes a plurality of timing devices 11, 12 and 13 which are connected to a pair of decade counter/dividers 14 and 15, the outputs of which are connected via a logic gate 16 to a transistor 17 for controlling a relay for enabling connection or disconnection of the telephone line.

In operation, if the unit has not been enabled by keying in the appropriate predetermined access code, then only emergency calls may be made dialling 999. In such a condition, upon lifting the hand-set, a pulse is generated which starts a first timer 11, which sets the outputs of the two decade counter/dividers 14 and 15 and at the same time starts a second timer 12, which provides a timer cycle of 30 seconds, which ensures that further dialling pulses do not reset the decade counter/divider I.C's 14 and 15. After 30 seconds, a third timer 13 is started, which activates a relay disconnecting the telephone line and resetting the telephone equipment back to a dialling state. If, in the meantime, the emergency number 999 has been dialled, the two outputs of the decade counter/dividers 14 and 15 are maintained high and via the logic means 16, which in this case is an AND gate, but may be any other suitable logic arrangement, switches on a transistor 17, which shunts the output of timer 13 preventing activation of the relay and keeping the telephone line open.

If, on the other hand, the correct code has been input into the key pad, the timer arrangement is by-passed enabling direct access to the exchange line for dialling in a conventional manner.

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To disable the device, it is a matter of simply of keying in the access code, thereby introducing the timer arrangement which may be initiated upon lifting the receiver in the manner described above.

As can be seen from Fig. 2, the access control unit preferably comprises a substantially rectangular housing 20, accommodating an electronic control unit 21, having a key pad 22 provided thereon and accessible from the exterior of the housing 20, said electronic control unit 21 being connectable to a standard telephone socket 23 by a conventional telephone jack plug 24. A standard telephone socket 25 is provided in the side of the housing 20 and control unit 21 to enable connection of a standard telephone plug for access to the line via the electronic control unit 21.

It will be appreciated that the device of the present invention enables an exchange line to be readily protected from unauthorised use utilising a simple code, whilst, when enabled, provides the flexibility and convenience of a conventional telephone socket.

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CLAIMS

1. An access control device for preventing unauthorised access to a telecommunications line or network, comprising a housing for completely covering a standard telephone socket, and containing an electronic control unit connectable to said telephone socket, in use, said housing also incorporating a telephone socket for enabling connection of a telephone instrument thereto, in use, to enable connection to said telecommunications line via said electronic control unit, subject to the input thereto of a predetermined access code.

2. An access control device as claimed in claim 1 in which said electronic control unit comprises a keypad for enabling entry of said predetermined access code to enable or disable said access control device.

3. An access control device as claimed in claim 1 or 2, in which said electronic control unit includes a plurality of timing devices, which in the disabled state allow a sufficient period for input of an emergency code or number within a predetermined period, after which the line is disabled if said predetermined emergency code or number is not entered.

4. An access control device as claimed in claim 3, in which when said emergency code or number is dialled, means are provided to prevent disconnection of the line.

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5. An access control device as claimed in claim 3, in which said timing devices comprises first, second and third timers, said first timer initiating the timing function, said second timer providing said predetermined period to enable input of an emergency code or number, and said third timer providing an output, when said predetermined period is exceeded without entry of a said emergency code or number, to cause disconnection of the telephone line.

6. An access control device as claimed in claim 5, in which a pair of decade counter/dividers are connected to the outputs of said first and second timers, which when an emergency number or code is entered both provide high outputs to activate switching means for shunting the output of said third timer to prevent disconnection of the telephone line.

7. An access control device as claimed in claim 6, in which the switching means comprises a logic arrangement and switching transistor, which transistor is connected in parallel with the energising coil of a normally-closed relay, said relay forming said means for disconnecting the line after said predetermined time interval.